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on the school grounds. Gathering seeds of plants characteristic of typical areas. Recording dates of disappearance of color in all plants characteristic of an area. Recording dates of hibernation of animals. Picture record of landscape, daily record of temperature, wind, and rainfall. Effect of same on soil, water, and air.

Number.— Estimating size of city and comparative length of lines of transportation from records of distances covered on excursions. Planning of maps to scale. Planning of boxes for science and geography work. Methods of buying materials for building purposes. Study of a road (one block in length) in process of construction near school grounds. Estimating (1) surface to be covered; (2) amount of material required; (3) cost of material; (4) cost of labor; (5) property-owners' assessments.

Square measure; volume; addition and subtraction of large numbers, and long division, involved.

Reading.— Stories of Marquette, Joliet, and the Indians. Stories on early modes of travel and means of transportation in foreign lands, such as "Ali in the Desert."

Writing.— Records in science, history, geography, and number work.

Language.— Sentence construction; recognition of subject and predicate and simple parts of speech. In written language, use of comma, question mark, quotation marks, and apostrophe.

Cooking.— Cooking and serving of fall fruits.

Housekeeping.— Organization of committees to look after science specimens, to care for desks and cases, the lunch-room and supplies for same.

Art.— Clay-modeling of animals used in transportation. Painting of pictures mentioned under "History." Study of effect of roads on landscape.

Music.— Exercises in ear-training, rhythm, breathing, note-reading, and writing. Writing simple original songs. Learning by rote songs relating to work, such as "Riding in the Cars," and songs for morning exercises.

Manual training.— Making boxes mentioned under "Science;" plate holders and knife and fork cases; sewing dish-cloths and towels, napkins, holders, and aprons.

Phyical training.— Developing and corrective exercises; plays and games.

FIFTH AND SIXTH GRADES.

HARRIET T. B. ATWOOD, JENNIE CURTIS, WILLARD S. BASS.

THE outline for this month comprises statements from the above teachers as to how the subjects of reading, writing, and arithmetic are taught in their grades, with illustrations taken from the October work of fifth and sixth grades.

I. *Arithmetic.*—Throughout the school the aim is that arithmetic shall be closely correlated with the other subjects of study; *i.e.*, whenever a teacher

finds that by the use of mathematics his pupils' imaging can be strengthened and made more vivid, whether the lesson be nature study, geography, history, art, or manual training, it is his privilege to change it to one of mathematics. By following such a course it is believed that mathematics may greatly enrich the other subjects. Moreover, it has been proven that any mathematical process, however difficult, can be more quickly taught when the actual need for using it is felt by the children, than by years of isolated drill. Therefore, by close correlation, mathematics itself will become easier and of greater value to the student.

If, however, the mathematical processes have not been properly taught, and the time comes when greater skill in combination of numbers is required for economical work, it is believed that drill is necessary and should be given. Upon these principles the following plan of work for the fifth and sixth grades is based:

When the children enter the fifth grade, they have already worked in mathematics for some four years. If they have really *used* mathematics during those years, it is expected that they will now be able to use numbers thoughtfully, and that they have acquired skill in the practice of simple operations in addition, subtraction, multiplication, division, and partition. If this condition has been reached, the line of procedure is easy; for fractions, decimals, and percentage bring with them no new elements, but simply a different terminology. If, however, the mathematical sense is found undeveloped, the thoughtful use of the simple operations must first be attained.

The time has not been sufficient as yet to learn the true state of the present fifth grade, but the work was begun as follows:

1. For the work in history it is necessary that each child construct a hand-loom as soon as possible. The children were shown a model of the loom to be made, and asked to calculate the amount of lumber necessary for the class of twelve. To do this the children first added together the lengths of the nine strips needed for each loom; 1, 3 feet; 2, 3 feet; 3, 2 feet; 4, 2 feet; 5, 2 feet 4 inches; 6, 6 inches; 7, 6 inches; 8, 8 inches; 9, 8 inches = 14 feet 8 inches.

They were required, for home study, to look up the subject of board measure, either in an arithmetic or by visiting a lumber yard, and reporting on the way lumber is sold. After doing this, they estimated that 3 boards 15 feet long, 12 inches wide, and 1 inch thick, when dressed, would be sufficient. The order was then sent in through the manual-training department. When the cost of the lumber is ascertained, each child's share will be calculated.

Next the children were asked for sketches and working drawings of the loom. (A working drawing made to a definite scale is required before work in the shop can proceed.) The working drawing was made one-sixth the actual size of the loom. In making the drawing the children found it necessary to find $\frac{1}{6}$ of 36 inches, $\frac{1}{6}$ of 3 inches, $\frac{1}{6}$ of 1 inch, $\frac{1}{6}$ of 8 inches, $\frac{1}{6}$ of 6 inches, and $\frac{1}{6}$ of 28 inches. Since each inch on their rulers was divided into

eighths of an inch, it was necessary to determine the value of $\frac{1}{8}$ of 1 inch in eights of an inch.

2. In domestic science the children are to preserve fruits in various ways for the Thanksgiving festival.

First they tried the drying process. Each child placed part of his fruit in the sun and part in the drying oven in order to find out the best way for drying the fruit that is to be prepared for Thanksgiving. Each portion was carefully weighed when fresh, and again after a week of drying, and the loss of weight under the two conditions compared.

In the weighing the children became acquainted with the metric system of weights and were shown how to write numbers decimally. They were also asked to learn the metric table of weights at this time. In finding the loss of weight, subtraction of decimals was necessary.

3. In clay-modeling the children are making pottery for the lunch-room.

In order to make symmetrical designs on the plates and saucers, it was found necessary to divide the circles, drawn to represent the dish, into equal parts, as thirds, fourths, or eighths. In mathematics, therefore, the children are at present engaged in finding out how to bisect and trisect arcs of circles.— *H. B. A.*

II. *Writing, spelling, and English.*—Writing, spelling, and English are so closely interrelated that it is impossible to deal with them separately. Every written lesson should be a "writing lesson." If, in the grades preceding the sixth grade, the children have been well trained with regard to legibility, speed, and position at the desk, the teacher's only problem is to preserve their good habits. However, this condition is seldom found, and for this reason the children should be carefully directed in the technique of writing. With us there is no formal drill in writing. Writing is used by the children in reproducing a piece of literature or story they have read, in relating their experiences in and out of school, in describing the materials with which they work, in giving the results of their study; in short, it is used as a means of expressing thought.

In doing their written work the children are encouraged to use the dictionary in order not to misspell; but when a misspelled word is found, the correct form is written and the child asked to rewrite his page. No paper containing a misspelled word is placed on file. Each child has a blank book in which he keeps a list of the words he misspells. The children have asked for a spelling match in which to spell the words in the dictionaries compiled by themselves. This request will be granted at the end of the month by giving them both a written and an oral test.

In all written work, capitalization, punctuation, and paragraphing are carefully observed. When an error is found, the page is rewritten, as in the case of a misspelled word. For instance, a child begins a sentence with a small letter. The rule for capitalization is asked for, given by the children, and by each child written into a book he has for the purpose. Again, the

wrong form of the verb is found. None of the pupils can give the rule, and they are asked to look it up at home and bring five examples of the correct form. The best papers are read before the class, and the thought and style discussed.

The following example illustrates our manner of attaining in writing, as a mode of expression, proficiency in spelling and in all the forms of language: Our grade spent a day at the lakeshore north of Chicago. We talked of the wearing and building by wind, waves, and streams, and found many examples of each. In school the next day each child told, in writing, how cliffs, ravines, deep indentations in the shore, sand beds, gravel beds, sand spits, bars, etc., are formed. These compositions were worked on by the children until they were satisfactory in writing, spelling, and English.—*J. E. C.*

III. *Reading, oral reading.*—By normal children the power to read is usually acquired between the ages of six and eight; the average age of children entering a fifth grade being about ten years. More than two years' experience in reading usually precedes this grade. If this reading has been strong imaging from the start, the problem of the child's reading has been forever solved, and all that remains is the enlargement of his vocabulary. If, on the other hand, unnatural reading has been allowed, *i. e.*, if the child has simply recognized and pronounced words without gaining the thought, true reading, *i. e.*, imaging by means of the printed page, must first be brought about.

In the fifth grade in the School of Education children in all stages between the extremes mentioned have been found. The line of procedure will be as follows:

1. Care will be taken to select an abundance of reading matter adapted to the children, *i. e.*, reading matter that will arouse images closely related to those aroused by their work in the central subjects of study, by their plays and sports, and by their home environment.

2. Library periods have been arranged during school hours for silent reading, or study, and the children will be encouraged to take the books home.

3. Ample opportunity will be given those children who do weak imaging while reading, to express what they read by drawing, painting, telling, or acting. For example, such children may be asked to tell in their own language what they read, or to step to the board and sketch the picture they have gained by the reading.

4. Periods on the program are given to oral reading, or, more broadly speaking, to oral expression. During such periods selection of literary and dramatic merit will be read aloud by the children, some selections will be dramatized, and certain poems will be studied and memorized.

5. Only those children who image well will be asked to read orally, although all will in some way express what they read. (See 3, above.)

6. Errors in speech will be noted and individual corrective work will be

assigned. If it is found necessary, daily drill will be given in articulation and in the correct utterance of vowel sounds.

An article upon oral and dramatic art in these grades will appear in a later issue of the COURSE OF STUDY.—*H. B. A.*

Physical training (for October and November. Omitted from October outline for fifth and sixth grades).—Exercises to improve posture, bearing, and carriage; fundamental free exercises in and from place, with special reference to development of accurate co-ordinate action. Elementary apparatus work, involving various forms of support and changes of support; adaptations of forms of free gymnastics in hang-standing and lying position. Various forms of springing exercises, skipping, jumping. Games: Indoor—ball practice with ten-inch hand-balls; "catch-ball"—position, distance, and direction definite; varying. Outdoor—various forms of relay-racing, team and class contests, twenty-five to fifty yards. Organization of basket-ball teams and dancing classes.

SEVENTH GRADE.

NOTT WILLIAM FLINT.

ALTHOUGH at the time these outlines go to the printer there has been only one full week of school work, nevertheless the plan of giving, instead of outlines of the work to come, reports on work past—a plan announced in October to begin with the December number—will, in the case of the seventh grade, begin now. Under the circumstances, however, the reports are necessarily meager.

A general outline of the work for the year in this grade will be found in the October number.

History.—In history the class began by attempting to image primitive conditions. The question, What would you do to leave a record of yourself if abandoned on a desert island? soon brought out the idea of writing on smooth stones and of stone monuments. No child thought of inscribing soft clay tablets and then baking them in the sun. That idea came only when one boy saw a picture of an Assyrian clay brick written on all four sides. The suggestion that the class might make such books for themselves brought out enthusiastic responses as to how the work should be done. (Several members had had experience in the clay-room.) Pictures of such writings in the *Encyclopædia Britannica*, in Ragozin's *Chaldea*, and in several books